



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

**In re U.S. Patent Application of** )  
**SATO** )  
**Application Number: 10/767,442** )  
**Filed: January 30, 2004** )  
**For: FILE SHARING DEVICE AND INTER-FILE** )  
**SHARING DEVICE DATA MIGRATION** )  
**METHOD** )  
**Attorney Docket No. WILL.0004** )

**Art Unit 2155**

**Honorable Assistant Commissioner for Patents**  
**Washington, D.C. 20231**

**PETITION TO MAKE SPECIAL UNDER 37 C.F.R. § 1.102(d)**

**FOR ACCELERATED EXAMINATION**

Sir:

Pursuant to 37 C.F.R. § 1.102(d), Applicant respectfully requests the application to be examined on the merits in conjunction with the pre-examination search results, the detailed discussion of the relevance of the results and amendments as filed concurrently.

Substantive consideration of the claims is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and telephone number indicated below.

Respectfully submitted,

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**January 4, 2005**  
SPF/JCM/JT



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**STATEMENTS & PRE-EXAMINATION SEARCH REPORT**  
**SUPPLEMENTAL TO**  
**THE PETITION TO MAKE SPECIAL**

Sir:

Pursuant to 37 C.F.R. §§ 1.102 and MPEP 708.02 VIII, Applicant hereby submits that (1) all claims of record are directed to a single invention, or if the Office determines that all the claims presented are not obviously directed to a single invention, will make an election without traverse as a prerequisite to the grant of special status; (2) a pre-examination search has been conducted according to the following field of search; (3) copies of each reference deemed most closely related to the subject matter encompassed by the claims are enclosed; and (4) a detailed discussion of the references pointing out how the claimed subject matter is patentable over the references is also enclosed herewith.

**FIELD OF THE SEARCH**

A search was conducted with the US Patent Office's full-text of US patent databases in the following *US Manual of Classification* subclasses:

<u>Class</u>	<u>Subclasses</u>	<u>Description</u>
<b>707/</b>		<b>DATA PROCESSING: DATABASE AND FILE MANAGEMENT OR DATA STRUCTURES</b>
	200	FILE OR DATABASE MAINTENANCE
	201	. Coherency (e.g., same view to multiple users)
	204	.. Archiving or backup
<b>709/</b>		<b>ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MULTICOMPUTER DATA TRANSFERRING OR PLURAL PROCESSOR SYNCHRONIZATION</b>
	213	. Multicomputer data transferring via shared memory
<b>711/</b>		<b>ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MEMORY</b>
	114	.... Arrayed (e.g., RAIDs)
	151	.. Prioritized access regulation
	161	.. Archiving
	202	. Address mapping (e.g., conversion, translation)

The search was directed to a file sharing device and inter-file sharing device data migration method. The file sharing device communicably connected to a migration source file sharing device and a host computer via a communications network, the file sharing device including: data migrating means that causes data retained in a file system of the migration source file sharing device to migrate to a file system of the file sharing device; and access processing means that processes access from the host computer in correspondence to data migration statuses during the data migration processing by the data migrating means. The data migrating means and the access processing means are processed in parallel.

## LIST OF RELEVANT REFERENCES

The search revealed the following U.S. patents, which are listed for convenience:

<u>U.S. Patent No.</u>	<u>Inventor</u>
<b>6,240,486 B1</b>	<b>Ofek et al.</b>
<b>6,374,327 B2</b>	<b>Sakaki et al.</b>

<u>U.S. Patent Application Publication No.</u>	<u>Inventor</u>
<b>2002/0004890 A1</b>	<b>Ofek et al.</b>
<b>2002/0144047 A1</b>	<b>Loy et al.</b>
<b>2003/0182257 A1</b>	<b>O'Connell et al.</b>

## Discussion of References:

US Pat. No. 6,240,486 to **Ofek et al.** is assigned to EMC Corporation and entitled “System and Method for On-Line, Real time, Data Migration.” **Ofek** provides on-line, real-time, transparent data migration between two data storage devices with minimal interruption to host system operations (Fig. 1; col. 2 lines 22-23). A second, new data storage system 16 can perform a “background” data migration procedure or process 27. Data may “migrate” from a first data storage system 14 to second data storage system 16 while being completely transparent to the host 12, and often in parallel with the channel process 25, which may be retrieving data from the first data storage system 14 in response to requests from the host or CPU 12 (col. 6 lines 57-60; col. 7 lines 2-7). The channel handling process 25 of the second data storage system 16 ... determines if the requested data is already stored in the second data storage system 16 (col. 8, lines 41-43). If the data is not presently stored on the second data storage system 16, the second data storage system 16 will generate a request to the first data storage system 14 to read the data, step 106 (col. 8, lines 50-54). “*Subsequently, the second data storage system 16 receives the requested data from the first data storage system 14, ...and writes the data to the cache memory 18 of the second data storage system 16 .... The second data storage system 16 then provides an indication to the host or data processing device 12 that the data is ready to be read* (col. 9, lines 1-7)”. In other words, **Ofek**’s second data storage system 16 only copies the requested but not-yet-migrated data to its own database for the client to access, rather than allows the client to directly access the first data storage system 14 if the requested data has not yet migrated to the second data storage system

16. As such, **Ofek** does not “provide the data from the file system of the migration source file sharing device in a case where the detected migration status of the data is a status where the data cannot be used from the file system of the migration destination file sharing device” as now recited in claim 1 of the present invention. Neither does **Ofek** “cause the migration destination file sharing device to inherit, prior to data migration, network environment information for identifying the migration source file sharing device on the communications network” as now recited in claim 1 of the present invention. US Pat. App. Pub. No. 2002/0004890 of **Ofek** shares the same deficiencies.

US Pat. No. 6,374,327 to **Sakaki** et al. is assigned to Hitachi, Ltd. and entitled “Method of Data Migration.” Upon receipt of an access by a CPU 10, the data migration control part 17 inside a new CU (DISK CONTROLLER) 11 judges if access to a region has been completed. If the access has been completed, the new CU 11 performs the service; otherwise the control part 17 performs the service by accessing the old CU 13 (col. 4, lines 65-66; col. 5, lines 2-10). When the CPU accesses a region where data migration has not been completed, data from tracks read from the old volume are stored to the new volume and the data once operated on is stored to both the old volume and the new volume. Further, when the data is to be written to the new volume, the data is also written to the old volume. Thus, the new and the old volumes contain the same data at the regions where data migration has been completed (col. 3, lines 36-44). **Sakaki** immediate switches to *dual operation after* the completion of data migration is enabled, and **Sakaki** switches to the old volume, when a failure occurs in the new volume during data migration since the most recent update of data is also reflected in the old volume (Fig. 1; col. 2, lines 46-51; col. 3, lines 44-51). However, **Sakaki** simply does not “cause the migration destination file sharing device to inherit, prior to data migration, network environment information for identifying the migration source file sharing device on the communications network” as now recited in claim 1 of the present invention.

US Pat. App. Pub. No. 2002/0144047 of **Loy** et al. is assigned to International Business Machines Corporation and entitled “Data Management Application Programming Interface Handling mount on Multiple Nodes in a Parallel File System.” Volumes are accessible from all the nodes via a shared disk mechanism, whereby the file data can be accessed in parallel by multiple tasks running on multiple nodes. However, **Loy** generally described the enhanced DMAPI provided for the parallel file system is used to support DM functions, such as automatic data migration (paragraph 12). **Loy** does not describe “providing

the data from the file system of the migration source file sharing device in a case where the detected migration status of the data is a status where the data cannot be used from the file system of the migration destination file sharing device” or “causing the migration destination file sharing device to inherit, prior to data migration, network environment information for identifying the migration source file sharing device on the communications network” as now recited in claim 1 of the present invention.

US Pat. App. Pub. No. 2003/0182257 of **O'Connell** et al. is assigned to EMC Corporation and entitled “Method and System for Migrating Data while Maintaining Hard Links.” Data is migrated from an original host storage system 19 to a replacement host storage system 25 (Fig. 2; Abstract). The replacement host storage system 25 includes a data migration module 39 and multiple file systems 41 (Fig. 3; paragraph 36). While data is being migrated, a client 13 may be allowed to access data either directly from replacement host storage system 25 or through the passing of a request to the original host storage system 19 (paragraphs 31 and 40). If the requested data has already been copied to the replacement host storage system 25, the data is read from the local file system 41 of the replacement host storage system 25 (paragraphs 41 & 42). However, if the requested data has not yet been copied to the replacement host storage system 25, *“files and subdirectories are created locally [in the replacement host storage system 25] based on information returned from the original host storage system 19. ... new records are established in the database of the data migration module 39 [in the replacement host storage system 25] for all newly created files and directories. The original host storage system 19 information is then inherited from the directory. Thereafter the process proceeds to step 135 where the data migration information is updated for the directory to indicate that it has been fully copied and passed (paragraph 43).”* In other words, **O'Connell** only copies the requested but not-yet-migrated data to the database of the data migration module 39 in the replacement host storage system 25 for the client to access, rather than allows the client to directly access the original host storage system 19 if the requested data has not yet migrated to the replacement host storage system 25. As such, **O'Connell** does not “provide the data from the file system of the migration source file sharing device in a case where the detected migration status of the data is a status where the data cannot be used from the file system of the migration destination file sharing device” as now recited in claim 1 of the present invention. Neither does **O'Connell** “cause the migration destination file sharing device to inherit, prior to data migration, network

environment information for identifying the migration source file sharing device on the communications network” as now recited in claim 1 of the present invention.

## **CONCLUSION**

Based on the results of the comprehensive prior art search as discussed above, Applicants contend that the position calculation method as now recited in independent claims 1, 11, and 13, especially the feature of “cause the migration destination file sharing device to inherit, prior to data migration, network environment information for identifying the migration source file sharing device on the communications network” are patentably distinct from the cited prior art references.

In particular, as now recited in the claim 1, a migration destination file sharing device 30 communicably connected to a migration source file sharing device 20 and a host computer 10 via a communications network CN (Fig. 1), the migration destination file sharing device 30 including: means for causing the migration destination file sharing device 30 to inherit, prior to data migration, network environment information for identifying the migration source file sharing device 20 on the communications network CN (e.g., IP addresses in Fig. 11; p. 41, last paragraph to p. 42; “*Thus, only the migration destination NAS 30 perceives the presence of the migration source NAS 20 (p. 42, lines 6-7)*”); means for causing access from the host computer 10 to be switched from the migration source file sharing device 20 to the migration destination file sharing device 30; means for detecting the migration status of data to which access has been requested by the host computer 10; means for providing the data from the file system of the migration destination file sharing device 30 in a case where the detected migration status of the data is a status where the data can be used from the file system of the migration destination file sharing device 30; and means for providing the data from the file system of the migration source file sharing device 20 in a case where the detected migration status of the data is a status where the data cannot be used from the file system of the migration destination file sharing device 30.

The invention recited in claim 11 is directed to a method of causing data to migrate from a file system of a migration source file sharing device to a file system of a migration destination file sharing device via a communications network. The method comprises steps corresponding to the means recited in claim 1.

The invention recited in claim 13 is directed to a computer program stored in a computer readable medium and for causing data to migrate from a migration source file sharing device to a migration destination file sharing device via a communications network. The computer program comprises modules corresponding to the means recited in claim 1.

In view of all the above, clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references, Applicant respectfully contends that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable consideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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